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BY FACSIMILE

To: Michael A. Band
United States Patent and Trademark Office
Art Unit 1723

Re: Telephone Interview
U.S. patent application no. 10/573,942
Attorney Docket: NAA237

Dear Mr. Band,

Thank you for scheduling a telephone interivew for Tuesday, October 4 at 2:00 pm EDT.

The principal items to be discussed in this interview are (1) whether all non-patent literature cited in an IDS submitted on March 29, 200 have been submitted, and (2) arguments and possible amendments to claims 16-21 to overcome rejections under Section 112.

Another item to be discussed briefly is how we may obtain an understanding of why arguments submitted against cited prior art has not been persuasive.

To assist with preparation to discuss item (1), we refer to the following:

(a) An IDS transmittal and substitute form PTO-1449 were submitted on March 29, 2006. This IDS cited the following non-patent literature:

- Toyoda et al., "Ultra-Smooth Surface Preparation Using Gas Cluster Ion Beams," Japanese Journal of Applied Physics, vol. 41 (2002), pp. 4287-4290.
- Yamada et al., Materials Science and Engineering, R34 (2001), pp. 231-295.
- Toyoda et al., "Surface smoothing mechanism of gascluster ion beams," Nuclear Instruments and Methods in Physics Research B 161-163 (2000), pp. 980-985.

(b) An IDS transmittal and substitute form PTO-1449 were submitted on September 14, 2007. This IDS included the Yamada reference mentioned above.

(c) The Office Action issued on September 17, 2009 includes a copy of the substitute forms PTO-1449 for both of these IDS and the copies indicate the non-patent literature was considered (the references are not lined through).

(d) The online PAIR system does not show references for those IDS submitted prior to May 2007. It does show the Yamada reference (65 pages) submitted with the IDS dated September 14, 2007.

To assist with preparation to discuss item (2), we submit the following:

(a) The term "orthographic projection" in one dictionary (Merriam-Webster Collegiate Dictionary) is defined as "projection of a single view of an object (as a view of the front) onto a drawing surface in which the lines of projection are perpendicular to the drawing surface."

(b) The term "orthographic projection" and variations of this term are not expressly mentioned in the specification but we believe it is supported by what would be understood from the following portion of the disclosure (page 14 lines 18-24 of application as filed):

> ... The irradiation with respect to the sample surfaces being carried out in two steps, at one selected irradiation angle θ_p and by changing the cluster ion beam direction (bearing angle) θ_r in the plane of projection on the faces of the samples. Specifically, irradiation was carried out with the irradiation angles (θ_p, θ_{r1}) in the first step, and the irradiation angles (θ_p, θ_{r2}) in the second step. Note, however, that bearing angle θ_{r2} is a relative value with θ_{r1} as the reference, e.g. setting θ_{r1} = 0°. ...

The "beam direction (bearing angle)" corresponds to the "projected direction recited in present claim 16.

(c) Alternatively, the claims could be amended. A few possibilities are:

> 16A. A method of smoothing a solid surface with a gas cluster ion beam, comprising:
> a) irradiating the solid surface with the gas cluster ion beam with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° so that ~~an orthographically-~~ a projected direction defined by projecting an incident direction of the gas cluster ion beam onto the solid surface accords with a first direction; and
> b) irradiating the solid surface with the gas cluster ion beam with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° so that the ~~orthographically-~~projected direction accords with a second direction different from the first direction.

> 16B. A method of smoothing a solid surface with a gas cluster ion beam, comprising:
> a) irradiating the solid surface with the gas cluster ion beam with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° so that ~~an orthographically-projected direction defined by projecting an incident-~~ a direction of the gas cluster ion beam ~~onto the solid surface accords with~~ is a first direction, wherein the sold surface defines a plane and the direction is a projection of the gas cluster ion beam onto the plane of the solid surface; and
> b) irradiating the solid surface with the gas cluster ion beam with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° so that the ~~orthographically-projected direction accords with~~ direction of the gas cluster ion beam is a second direction different from the first direction.

16C. A method of smoothing a solid surface with a gas cluster ion beam, comprising:

a) irradiating the solid surface with the gas cluster ion beam in a first direction with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° ~~so that an orthographically projected direction defined by projecting an incident~~, wherein the first direction is defined by a projection of the gas cluster ion beam onto a plane defined by the solid surface ~~accords with a first direction~~; and

b) irradiating the solid surface with the gas cluster ion beam in a second direction with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° ~~so that the orthographically projected direction accords with a~~, wherein the second direction is defined by a projection of the gas cluster ion beam on the plane and the second direction is different from the first direction.

16D. A method of smoothing a solid surface with a gas cluster ion beam, comprising:

a) irradiating the solid surface with the gas cluster ion beam in a direction with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° ~~so that an orthographically projected direction defined by projecting an incident~~, wherein the direction is defined by a projection of the gas cluster ion beam onto a plane defined by the solid surface and the direction accords with a first direction; and

b) irradiating the solid surface with the gas cluster ion beam in the direction with an irradiation angle between the solid surface and the gas cluster ion beam being less than 30° ~~so that the orthographically projected~~ the direction accords with a second direction that is different from the first direction.

Very truly yours,

David N. Lathrop